

## **THEC Performance Funding, Standard I.B 2002-03**

### **Pilot Evaluation: Assessment of General Education Learning Outcomes**

#### **BACKGROUND AND PURPOSE**

In accepting the challenge to develop and implement a pilot assessment of general education learning outcomes, Roane State Community College sought to clarify and enhance the general education assessment process by establishing more valid and reliable measures for evaluating the college's instructional effectiveness in the general education core. The central objective of the pilot project has been to determine an assessment method that would be most reflective of the competencies that graduating students should be able to demonstrate based upon their educational experience at Roane State.

Leadership for this initiative has been given to the standing General Education Assessment Committee, which was put into place to continue the work of the committee that studied learning outcomes during Roane State's SACS self-study. The General Education Assessment Committee is comprised of faculty from each of the academic divisions, representatives from the Office of Institutional Effectiveness and Research and is chaired by Dr. Richard Baskin, Assistant Professor of English and Director of the Learning Center.

In an effort to formulate an assessment method that would combine ease of implementation with readily quantifiable college-wide results, the committee determined that pre-and-post testing would best meet these needs. Originally the pilot plan called for pre-tests, consisting of 20 locally constructed questions, to be administered during Orientation classes and for post-tests to be administered by adding 20 local questions to the Academic Profile exit exam. However, in 2001-2002, the college obtained approval from THEC for a revision to this plan that calls for the administration of locally constructed pre-and-post tests for individual Roane State courses. The revised plan is built upon course blueprints and test banks previously developed by Roane State faculty and has the advantage of permitting a larger sample of questions per 40-45 minute test and of achieving a more closely matched cohort of students participating in both parts of the exam. Students are tested for entering general education competencies through entry-level general education courses and their scores compared to a matched cohort upon completion of an academic semester.

In 2001-2002, faculty in the general education academic areas sought the guidance of Dr. John Ray, Associate Director of the Institute for Assessment and Evaluation at the UT/Knoxville College of Education for his expertise in the field of psychometrics. Based upon his recommendations, course blueprints were developed that identified major principles of the course content areas and prioritized competencies at basic, intermediate, and advanced levels. The blueprints provided the basis for test question

development and faculty were provided with further guidance on how to develop effective multiple-choice questions.

Blueprints and test questions were developed for 20 general education courses: College Algebra, English Composition I and II, World Literature I and II, British Literature I and II, American Literature I and II, General Biology I and II, General Chemistry I and II, Physical Geology, Historical Geology, Survey of Western Civilization I, Survey of World History I, Survey of U.S. History I, General Psychology, Introduction to Sociology, and Principles of Economics I.

#### **GENERAL EDUCATION ASSESSMENT PILOT 2002-03 ACTIVITIES:**

The committee decided to implement the pilot on a reduced scale for the first year (2002-03) of test administration, selecting a limited number of key general education courses for participation during the first year of testing. The committee wanted some process and formative evaluation measures in place to allow for future refinement of implementation plans, general education testing instruments, and to modify committee/faculty actions as needed. Efforts will be made in subsequent years to expand the number of participating courses.

Testing began during spring 2003 semester in the following general academic areas and courses:

- **English**
  - Composition I
  - Composition II
- **Mathematics**
  - College Algebra
- **Chemistry**
  - General Chemistry II
- **History**
  - Survey of Western Civilization I
  - Survey of Western Civilization II
  - Survey of World History II
  - Survey of United States History II

Students were pre-tested in the aforementioned courses at the beginning of the semester and post-tested at the end of the semester. All of the courses had a respective pre-test/post-test, with the exception of the history courses. For the history courses, the same pre-test/post-test was used for all classes. Faculty instructed students to report to the Testing Center where the actual exams were administered and records of student participation kept. Pre-tests and post-tests were compiled and analyzed and individual student scores and overall course scores were reported to faculty for their respective course(s). In addition, faculty were provided a test-item analysis for their review.

## **FINDINGS:**

Pre-test and post-test results were analyzed by matched cohorts in the following general education courses: English Composition I, English Composition II, College Algebra, General Chemistry II, and for all of the History courses. Measures of central tendency were computed for the pre-test and post-test scores and gain scores were computed. Pre-test and post-test mean scores were compared by using a paired sample (or dependent) t-test, for each of the participating general education courses and areas to see if there were any significant differences. In all of the participating general education areas there was a significant difference between the pre-test and post-test scores.

College Algebra had the highest average gain score followed by Chemistry II. There was a significant difference between pre-test and post-test scores,  $t(30) = -11.326$ ,  $p = .000$ , among the participating College Algebra students. For Chemistry II, there was also a significant,  $t(20) = -7.426$ ,  $p = .000$ , difference between the scores. Results were indicative of significant differences in all of the general education areas between the pre-test and post-test scores. The post-test mean score, based on the percent correct, are highest for College Algebra followed by English Composition I. However, the mean scores and average gains are marginal for all of the general education areas except for College Algebra. This may be attributed to the way in which faculty held students accountable for these tests.

For the first year of implementation, faculty were given the prerogative to choose how they would make their students accountable for participation in this pilot. Some faculty chose to give extra credit for the pre-test and post-test, while others calculated this as a course requirement that would have significant weight in students' overall grades. Students taking College Algebra, for example, were required to pass the final post-test exam in order to successfully pass the course.

The scores were analyzed for each course and by faculty member. For the faculty that required their students to take these tests and attached to the tests a significant value/weight toward the overall course grade, the overall post-test mean scores and gain scores were far better when compared to those faculty members that only assigned extra credit or some other accountability measure for participation. Thus, for the upcoming year a more standardized accountability measure will need to be implemented in order to make this a more valid measure of student achievement in general education courses.

Further test results are provided in Table 1.0 below.

**Table 1.0: General Education Pre-Test/Post-Test Results**

General Education Area	Mean Pre-Test Score	Mean Post-Test Score	Average Gain	Probability/Significance
College Algebra	36.00	73.50	37.50	.000*
Chemistry II	29.75	53.25	23.50	.000*
English Composition I	56.86	65.05	8.18	.000*
English Composition II	50.38	55.62	5.23	.002*
History	41.65	47.08	5.43	.001*

**USE OF FINDINGS:**

For faculty participating in the General Education Pilot, a debriefing of results will be held at the beginning of fall semester 2003. Findings derived from this pilot will be discussed in detail with participating faculty and the entire General Education Assessment Committee. The meeting will be facilitated by the Institutional Research Analyst, Kristi Roberson-Scott.

During this meeting the aggregate results for all general education areas will be discussed and a dialogue of the test-item analyses will be prompted. Perhaps more importantly, the findings should prompt a discussion regarding the assessment tools, and the ways in which these may need to be modified to represent more valid measures of student learning outcomes for each general education area. To that end, discussions of how to more appropriately craft an assessment tool that represents the knowledge that all students should master by the end of a given semester in a respective general education course will be revisited. Faculty will need to pay more conscious attention to areas and types of knowledge where student achievement is weak and use the results of this year's assessment to strengthen instructional effort in those areas.

**ACTIVITIES AND OBJECTIVES FOR 2003-2004:**

The assessment findings from 2002-2003 should provide faculty with a more comprehensive picture of general education entering and exiting competencies, based upon Roane State specific course work. Although graduating students are tested using the Academic Profile (short version), Roane State faculty wished to augment this test, with its focus on critical reading and thinking, by testing using an instrument more closely aligned to the Roane State core curriculum. It is anticipated that this effort should result in the college being able to more accurately measure general education learning outcomes, in valid and reliable ways, and allow faculty to adapt, modify, and

improve instructional efforts as needed to accommodate the Roane State student population. It is anticipated that the college, under the leadership of the General Education Assessment Committee will engage in the following activities during 2003-2004:

- Review the findings from test administration conducted during 2002-03;
- Revisit the intended general education learning outcomes by area/courses;
- Revise the testing instruments as needed;
- Begin construction of a test item bank of questions for each general education area that will enable post-tests to represent 80% new material/questions, while, at the same time, test for the same competencies as the pre-test;
- Modify instructional efforts as needed to improve learning outcomes in areas of weakest student achievement;
- Increase the number of general education courses participating in the pre-and-post test project;
- Recruit more faculty participants for the pilot;
- Develop training opportunities to provide faculty with tools for improving general education competencies across the curriculum;
- Implement a more standard student accountability policy, to be utilized by all participating faculty, in order to reduce the ability of this factor to confound results.